

ABSTRACT OF THE DISCLOSURE

A method for improving the thinning and planarity of a wafer backside utilizes a planarization material applied to the backside prior to at least one portion of the thinning operation and which is subsequently removed concurrently with the wafer material by one or more suitable thinning or planarization techniques. The planarization material may be applied as a thin layer or film of a hardenable material to the rough, bare backside of a wafer to produce a planar surface when hardened. The planarization material is selected to exhibit a material removal rate approximating the removal rate of the wafer material for a given removal technique such as etching, mechanical abrasion or chemical-mechanical planarization (CMP). This approach to wafer thinning and planarization results in improved process control in the form of uniform material removal rates, reduction in wafer warpage, final surface smoothness and planarity, and even distribution of residual stresses.

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